

REMARKS

Claims 1-5 have been amended. Claim 6-17 has been canceled. Claims 1-5 are pending in this application.

I. Objection to Claim 17

The office action states that claim 17 is objected to because if claim 5 is allowable, then claim 17 will be a substantial duplicate thereof. Therefore, applicant has canceled claim 17 rendered moot this objection.

II. Claim Rejections Under 35 U.S.C. §101

The office action states that claims 1-17 are rejected under 35 U.S.C. 101 because the claimed invention is not directed to a practical application of a judicial exception. The examiner has stated:

“The claimed invention performs no physical transformation, so a useful, tangible, and concrete result must be produced instead. The claimed invention fails the useful, tangible, and concrete test since no tangible result is produced.”

Applicant submits that the invention and the supporting disclosure therefor, does in fact call for such a tangible and concrete invention. In the Background of the invention, it is made clear the objective of the invention is to correct for inadequacies in the existing investment management practice of selecting book-valued investments on the basis of differences in past-period investment performance and to transform a process that can not currently be relied upon to generate a selected portfolio that will consistently out-perform their peers in a subsequent future period, into one that will in fact generate that portfolio of superior performance every quarter regardless of future market conditions.

“[14] Economists have sought to validate this valuation process by finding evidence of the persistency of these performance differences into a future period – to find that the ‘winners’ of an asset class so identified in the past, remain winners into the future. They have been frustrated in their efforts in that the empirical evidence of such persistency collected using existing analytical processes has been weak and conflicting. Notwithstanding the lack of evidence confirming that differences in past performance provides a useful signal of differences in future performance, the practice of evaluating the worthiness of investments based on the past strength of their performance relative to their asset-class peers prevails among industry practitioners and investors.

[15] Therefore, there is a need for a corrective process that improves on the existing procedures in general use for valuing the past performance of book-valued investments within an asset-class. The present invention solves for the conundrum posed by past analyses of empirical data regarding the persistency of performance differences, producing, as a narrow application, an evaluative technique of practical relevance for those practitioners that believe they possess special knowledge of future market trends. This basic process is further enhanced to provide a wider application -- a method of evaluating differences in past performance that has practical relevance for those practitioners that profess no special knowledge or ability to predict future market trends, and that require a valuation procedure that retains its legitimacy regardless of the future path of market conditions.”

The Specification and drawing figures reference a back-test of this process for the (40) quarterly selection periods from 12-91 to 12-01, and listed results of that test within the section, Detailed Description of the Preferred Embodiment, demonstrating its success in distinguishing between groups of book-valued investments within an asset-class population based on differences in their future investment performance at over a 95% confidence level.

“[152] In practice, ones wants certainty that the groupings strategy crafted within an analysis period employed to identify green (G), red (R) and yellow (Y) groupings within an asset class population remain valid into the future. This means that one wants to be certain that the average differential returns for the green (G) and red (R) groupings persist on being significantly different than the class average and the average differential returns for the yellow (Y) groupings persist on being indistinguishable from that class average. The statistical measure for this certainty is that the average of the average standardized differential returns over the analysis period for the red (R) and green (G) groupings to test above the 95% confidence level and the yellow (Y) groups below the 95% benchmark.

[153] Another measure that appears to be even more descriptive is the division of the group analysis period average by its standard deviation -- its ‘efficiency ratio’. For the series of grouping schemes tested, an efficiency ratio of over 1.00 appears to indicate a strong grouping scheme for red (R) and green (G) groupings – yellow (Y) groupings trend toward a ratio of 0.50 or lower.

[155] Table 1

Grouping	Correlation Coefficient	Efficiency Ratio	Confidence Level
Green (G)	> (+) 0.50	> (+) 1.00	> (+) 95%
Red (R)	< (-) 0.50	< (-) 1.00	> (+) 95%
Yellow (Y)	< (-)0.50 or > +0.50	> (-)1.00 or < +1.00	< (+) 95%

The examiner’s office action calls for the claims themselves to be better drafted to be clearly directed to include some type of physical transformation to provide the required tangible and concrete result. Accordingly, applicant has amended the claims to provide such physical transformation language. More specifically, application has added claim language directed to “acquiring and storing, as a data-record, the measurement of periodic investment returns for each member of an asset-class population for an analysis period comprised of a plurality of contiguous evaluation and selection time

periods” and also “plotting the measurement of periodic investment returns for each member of an asset-class population for an analysis period on a graph”. These amendments clearly show a tangible and concrete result. The disclosure supports these amendments. For example, paragraph 127 states:

Having computed a market line for an asset class population for their evaluation period, I calculate a ‘market return’ for each fund within the asset class and assign this calculation to each fund record.

Thus, the amendment concerning acquiring and storing a data-record is fully supported. Also, the plotting of data on graphs is discussed throughout the specification as is clearly represented by the numerous graphs that are result of plotted data thereon. See, for example, figures 22A, 23A, 24A and 26A.

Also, the applicant has added the term “computer implemented” to the preamble of claim 1 to further clearly state the physical nature of the process. This amendment is fully supported in the disclosure because the specification further states in paragraph 127 that:

There will exist more subtle and clever procedures for determining this maximum – perhaps an **algorithmic** solution in the future. My process uses a rather simple device to test for this maximum. Having **computed** a market line for an asset class population for their evaluation period, I calculate a ‘market return’ for each fund within the asset class and assign this calculation to each fund record.

The applicant disclosure supports the term “computer implemented” because the steps of data being “computed” and the use of algorithms to carry out the invention is addressed. Thus for data to be “computed”, particularly data in the nature of a large archive of years of securities data, computers are used. Moreover, a person of ordinary

skill in the art would clearly understand that computers are implemented to compute such large volumes of data like the data processed in accordance with the method of the present invention.

In view of these amendments to the claims, applicant submits that the claims provide a tangible and concrete result under Section 101. Applicant respectfully requests that this rejection should be withdrawn.

III. Claim Rejections Under 35 U.S.C. §112

The office action states that claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. More specifically, the office action states that claims 1 and 17 lack antecedent basis for the language "the record" in the limitation "appending the class average of average returns for the asset class as calculated over the analysis time period to the record of each member of the class". There is insufficient antecedent basis for this limitation in the claims. Accordingly, applicant has amended claim to refer to "a data-record" to address this issue.

Claims 1 and 17 recite the limitation "the dissimilarities" in the limitation "maximizing the dissimilarities of correlation with the average returns of the asset class between two groups created by the bisecting of the asset class population". The office action states that there is insufficient antecedent basis for this limitation in the claims. Examiner interpreted the limitation as determining which assets have returns that are least correlated to the average returns of the asset class. Accordingly, to not only

address the antecedent issue, applicant has amended claim 1 to state “a lowest correlation coefficient” to make the claim more clear and definite.

The rejection of claims 8 and 17 under Section 112 is now moot in light of the cancelation of these claims.

Claims 2-7 and 9-16 were rejected under Section 112 by virtue of their dependence on claim 1. In view of the amendment to claim 1 to make it clear and definite under Section 112, applicant submits that all claims, namely, remaining depending claims 2-5 are now also clear and definite. The rejection of claims 6, 7 and 9-16 under Section 112 is now moot in light of the cancelation of these claims.

In view of the foregoing, applicant submits that all pending claims are now clear and definite under Section 112.

IV. Rejection of Claims 1-12, 14, 16 and 17 under Section 103

The office action states that claims 1-12, 14, 16 and 17 are rejected under Section 103 as being unpatentable over the combination of applicant’s admitted prior art, Dunn ‘962 and Sperando ‘251.

A. Claim 1

The office action states that applicant’s admission of prior art teaches providing a market benchmark and analysis time period for an evaluation and selection time period; verifying the adequacy of the market benchmark and analysis time period; defining members of an asset class as an asset class population; calculating the relative investment performance of the members of the asset class for

each evaluation and selection period; bisecting the asset class population into two halves through a point of average class risk for each evaluation period (see FIG. 3A);

However, it is stated that Applicant admission of prior art does not teach providing the analysis time period as a plurality of contiguous time periods.

In support of this missing claimed feature, Dunne is cited for the teaching of analyzing investments using a plurality of contiguous time periods (see paragraph 31). The office action states that it would have been obvious to one of ordinary skill in the art at the time of invention to modify the providing a market benchmark and analysis time period of Applicant admission of prior art with providing the analysis time period as a plurality of contiguous time periods, as taught by Dunne. To support this, it is stated that one skilled in the art would have been motivated to make the modification in order to permit historical performance data for investments to be analyzed in respect of every possible investment period using any pre-existing or personally defined quantitative performance measurement algorithm (see paragraph 24).

Further, Applicant's admission of prior art does not teach determining whether the investment performance of the bisections of asset class population formed in each evaluation period is cross-cyclical in each subsequent selection period; calculating a correlation coefficient between the pattern of asset class average returns and the pattern of group average investment performance for the population within each of the halves; maximizing the dissimilarities of correlation with the average returns of the asset class between two groups created by the

bisecting of the asset class population; and appending the class average of average returns for the asset class as calculated over the analysis time period to the record of each member of the class.

Sperandeo is further cited for the teaching of determining whether the investment performance of assets is cross cyclical through a range of economic cycles (see [0019]). The examiner asserts that it would have been obvious to one of ordinary skill in the art at the time of invention to modify the bisecting the asset class population taught by Applicant admission of prior art with determining whether the investment performance of the bisections of asset class population formed in each evaluation period is cross-cyclical in each subsequent selection period. The examiner also states that one skilled in the art would have been motivated to make the modification for the benefit of determining assets which have a reliable return regardless of economic cycle. Sperandeo is also cited for the teaching of determining the correlation between the performance of an asset and the performance of the general debt and equity markets (see paragraphs 1-4).

In summary, the office action states that the combination of the above prior art references meet the limitations of the claimed invention under Section 103.

As to applicant's admitted prior art, applicant agrees that prior art teaches "calculating the relative investment performance of the members of the asset class for each evaluation period as a method for selecting book-valued investments". But it does not teach "calculating the relative performance for each subsequent selection period of

the members of the asset class for each evaluation period” as a method for selecting book-valued investments.

This crucial difference is the key to the uniqueness of the present invention. Industry convention is to craft selection processes looking only for differences in past-period performance as viewed in a prior-period evaluation period. They do not consider the consequences of those selections as reflected in differences in future period performance within an ensuing selection period. Existing processes evaluate only *ex-post* differences which is where the investor would have ended up within the performance distribution if they had been lucky enough to invest in the asset when the evaluation period started. They do not evaluate on an *ex-ante* basis, which is where the investor would have ended up within the performance distribution of the future selection period once they selected an asset based on the *ex-post* differences they could see in the evaluation period.

In the specification of the instant application, numerous analyses published over the years are discussed where economists have investigated those consequences as they related to selecting mutual fund investments, which is a type of book-valued investment, and their opinion has not changed since Jensen first performed this analysis in 1968 (“Problems in the Selection of Security Portfolios”, Michael C. Jensen, The Journal of Finance, 1968), as in paragraphs 24-28 of the specification of the instant application:

[24] Since the inception of CAPM, economists have sought to find a process for sectioning the distribution of past-period investment performance for an asset-class population of funds in a manner that would reveal

differences in their future performance. This effort has historically centered around 'a search for the holy-grail' which is a method of predictive selection that would consistently signal which fund managers would be 'the winners' of a future period. Their methods have been based on the concept that the successful track record of fund managers in a past period should persist -- that 'winners repeat'. Thus said, the segmentation strategies employed have revolved around dividing an asset-class population between its strongest and weakest members in terms past-period investment performance and looking for a pattern of persistent differences in investment performance from these segments into the future.

[25] Economists have been singularly unsuccessful in this pursuit. Selecting for those funds whose past performance has been most positive (the top 100 performers, for example) has generated a mixed picture. There exist a host of studies where analysts have found that rather than signaling future strength, membership in the strongest-performing group in a past period ensures only a marginal chance of a positive future at best, and in most cases, results in negative future performance differences. [Jensen, 1968], [Grant, 1978], [Malkiel, 1995], [Sharpe, 1996]

[27] The common thread in these analyses -- the one conclusion of practical use -- has been the finding that the section of a population that contains the worst-performing funds for a past period persists in being among the worst-performers of a future period.

[28] "The added return in the past, because of a relatively small degree of persistence, is a pretty rotten indicator unless it is big and negative." [Tanous, p.99, 1997]

Below are a number of other quotes that further support this position:

"Technical analysis that tries to divine future returns from patterns of past returns and prices is nearly useless. Any apparent predictability is either a statistical artifact which will quickly vanish out of sample or cannot be exploited after transaction costs."

Cochrane, John H. , *New Facts in Finance*, Economic Perspectives, Federal Reserve Bank of Chicago, 3Q1999, page 37.

'one-year performance persistency is mostly eliminated after one year...except for the persistent under-performance by the worst funds, mean returns and abnormal performance across deciles do not differ statistically significantly after one-year.'

Carhart, Mark M , *On Persistence in Mutual Fund Performance*, The Journal of Finance, vol52-1, March 1997

These same economists have not taken the second step of suggesting a method for successfully selecting investments from a population of book-valued investments within an evaluation-period asset-class population using the consequences of the selections in the relative performance of the members of this population in a subsequent selection period, they just offer their criticism.

Without that advice at hand, the industry has continued to select for book-valued investments using only differences found in past-period performance among members of an evaluation period asset class. It is not possible to answer to the motivation for this, especially since they were originally told 50 years ago that this method did not work.

Dunne teaches reliance on this existing method for selection for book-valued investments, limiting his invention to modifying the method of selecting from past-performance differences revealed within a single evaluation-period asset-class population to the average of differences revealed within a plurality of evaluation periods of different lengths and that could include overlapping periods.

The limitation of his process is that he continues to rely on comparing evaluation-period results. Dunne does not take the step of grading those results by their consequences within an ensuing selection period. Dunne changes of his success in curing the flaws of this paradigm by building upon it are remote, as seen in the following excerpts from the '962 publication.

[Abstract] "This invention permits historical performance data for investments to be analyzed in respect or every possible investment period using any pre-existing or personally defined quantitative measurement algorithm."
[Abstract]

[0008] "This analysis is usually accomplished through the construction of regression-based models, an approach that has evolved from the pioneering work of William Sharpe who first developed the Capital Asset Pricing Model. The models try to measure the systematic, causal relationship between price performance of a fund and the movement in one or more market indexes."

[0059] One of the biggest difficulties facing an investor who seeks to select a number of mutual funds using currently available performance analytics is that performance measurements are provided for only a limited number of discrete periods.

[0060] Typically performance indicators such as return, volatility or Sharpe Ratio are calculated for periods of one, three, five, seven and ten years, measured by calendar year or trailing [from a recent month or quarter-end. In addition the period from inception to the present is often included. Alpha and Beta calculations are similarly based on one or perhaps two specific periods such as three or five years.

[0061] A major difficulty with this approach is that these average numbers can be misleading and can lead to mistaken selection because they fail to adequately reflect the true performance history of a fund.

[0062] This invention however uses a different approach that provides greater depth and accuracy of analysis than is currently available. This is the Multi-Period Analysis Algorithm. The method of this invention takes the performance data in whatever frequency is available (in this case monthly) between the dates in respect of which a comparison is required (October 1991 to September 2001 inclusive in the case of this example) and calculates the annualized return that would have been earned by an investor in every possible sub-period, or holding period, between these dates.

[0063] The holding periods are called overlapping holding periods because, two periods of the same length, for example, the period spanning January, February, and March and the period spanning February, March and April have two months in common. Thus, the holding periods overlap.

The present invention represents a new and novel shift in this paradigm. It is illogical that one skilled in the art would proceed from Dunne's method of modifying the existing paradigm to arrive at the present invention because the present invention discards Dunne's paradigm, whether or not they were motivated by the failure of his modifications to deliver a viable selection process.

Sperandeo is also cited for the teaching of determining the correlation between the performance of an asset and the performance of the general debt and equity markets. Applicant notes that Sperandeo teaches determining the extent of correlation in the patterns of periodic returns between two markets over time. However, that teaching does not apply to present invention that, in contrast, teaches the determining the extent of correlation in the patterns of differential returns between assets within a single market over time. This not surprising because

Sperandeo's method is a process for selecting an asset allocation strategy, not for selecting investments.

It should also be understood that selecting investments happens once the asset-allocation strategy has been decided, and is a process that is conducted within the choices of a single asset-class. The industry convention for constructing asset classes, whether made from book-valued or market-valued investments is to combine assets that have a uniquely similar pattern of periodic returns. Once that asset-class is assembled, determining the extent of correlation of this pattern becomes irrelevant.

Sperandeo's method, given that it is successful, will provide motivation for those skilled in the art to continue to build asset classes combining assets of uniquely similar patterns of periodic returns, so that they can continue to build investment portfolios made of asset-classes that provide a diversified risk. It is improbable that his method, even if it fails, will motivate those skilled in the art, to abandon this diversification strategy and start building asset-classes of randomly correlated patterns of periodic returns.

The reason no one has thought to look for the extent of correlation in the pattern of differential returns between investments within an asset-class over time is that no one believes that the differences in differential returns will be large and persistent enough to establish that correlation.

As mentioned in the instant specification, the Capital Asset Pricing Model is the industry convention for analyzing the operation of asset class populations of

investments. This model relies on the theory of “Efficient-Markets” theory to assume that any differential returns, which is average returns for asset class members that are different from that of the asset-class average at the member’s level of investment risk, are a transient anomaly will be priced away by the action of investors, and that they will be small and will persist for only a short period of time, if at all.

Applying this model and its assumptions regarding the transience of differential returns appearing within asset-classes of book-valued investments, including those made from mutual funds, is a mistake that has persisted since Sharpe introduced the model in 1964.

For a book-valued asset-class population, large and persistent differences in differential returns can and do exist, since book-valued asset-classes are missing the repricing mechanism of an efficient market. However, the industry has been consistent in their denial of the legitimacy of these differences because of their incorrect assumption that book-valued collections of investments should act like efficient markets.

The result of this incorrect understanding has been increasingly obscure rationalizations for explaining away those instances when analysts find these large and persistent differences, which is a phenomenon mentioned in the present application:

“The wide dispersion in fund average returns in figure 7 [a mean-variance graph showing a widely dispersed “cluster” of performance points around a market line for a population of mutual funds] is a bit surprising. Average returns vary across funds almost as much as they do across individual stocks. This fact implies that the majority of

funds are *not* holding well-diversified portfolios that would reduce return variation, but rather are loading up on specific bets.”

Cochrane, John H. , *New Facts in Finance*, Economic Perspectives, Federal Reserve Bank of Chicago, 3Q1999, page 37.

If one is to find evidence of or motivation from prior art for selecting book-valued investments based on the pattern of correlation in differential returns between investments in a book-valued asset-class population, they first need to find someone other than applicant that will admit that differences in differential returns among such a population do exist. Without this evidence it cannot be argued that someone of ordinary skill in the art, as currently taught, would be motivated to adopt a selection strategy based on these differences much less apply it to a process for finding investments within an evaluation period based on these differences within a future selection period.

In accordance with the arguments above, applicant has amended claim 1 to better set forth the invention, namely, to more specifically delineate the difference in the method of the present invention that uses performance differences in a selection period to identify selection prospects in an evaluation period population. Since there is no motivation to combine the cited references, the rejection of claim 1 under Section 103 cannot be maintained. Also, even assuming that the claims are combinable under Section 103, they fail to teach the claimed invention, as amended herein. Therefore, claim 1 is patentable over the cited prior art.

B. Claim 2

The office action states that applicant's admission of prior art teaches scaling a correlation coefficient (see paragraph 124). The examiner notes that the scaling is admittedly done by convention.

Since claim 2 is dependent on now allowable claim 1, applicant submits that claim 2 is now also allowable over the cited prior art.

C. Claim 3

The office action states that applicant's admission of prior art teaches calculating a market return for each member of an asset class (see paragraph 4).

Since claim 3 is dependent on now allowable claim 1, applicant submits that claim 3 is now also allowable over the cited prior art.

D. Claim 4

The office action states that applicant's admission of prior art teaches bisecting the asset class population into two halves is determined by the formula:

$$\text{Dividing-line ret.} = \text{market-ret.} - (((\text{market-ret.}) - [\text{average-average ret.}]) * \text{constant}\{K\})$$

Examiner notes that when $\text{constant}\{K\}=0$, the formula recreates the market-line, which is used to separate the asset class population (see prior art FIG.3.). Moreover, since claim 4 is dependent on now allowable claim 1, applicant submits that claim 4 is now also allowable over the cited prior art.

E. Claim 5

The office action states that applicant's admission of prior art teaches providing a market benchmark and an analysis period made from a plurality of

contiguous evaluation and selection time periods; providing sharper definition to the two halves of investment groups formed (*R/GIY11Y2* coding convention); determining a class average for investment performance; indicating asset class populations whose evaluation-period investment performance relative to the class average is different; bisecting the asset class population into two halves for each evaluation time period (see FIG. 3); calculating the average standardized difference in investment performance relative to the class average for each half in each subsequent selection time period (see paragraph 9); selecting a division line to form the two halves that results in the greatest difference between the two halves in terms of size and consistency of their respective selection-period average standardized difference in investment performance relative to the class average (see paragraph 9); standardizing the investment risk for each member of an asset class for each evaluation period around their asset class average risk (see paragraph 9); calculating the average standardized difference in investment performance relative to the class average for each of the two halves for each selection period within the analysis period; and determining the strength of investment performance for each member of the asset class (see paragraph 9).

In accordance with the examiner's comments, applicant has eliminated the language within claim 5 containing language redundant of claims 1-4.

Since claim 5 is dependent on now allowable claim 1, applicant submits that claim 5 is now also allowable over the cited prior art.

F. Claims 6-12, 14, 16 and 17

The office action states that claims 6-12, 14, 16 and 17 are rejected under Section 103 in view of the above combination. In view of the cancellation of claims 6-12, 14, 16 and 17, the rejection of these claims is now moot.

V. Rejection of Claims 13 and 15 under 35 U.S.C. §103

The office action states that claims 13 and 15 are rejected under Section 103 as being unpatentable over the combination of Applicant's admission, Dunne, Sperando and Official Notice. In view of the cancellation of claims 13 and 15, the rejection of these claims is now moot.

VI. Conclusion

Applicant submits that Claims 1-5, as amended, are allowable over the cited prior art. In view of the above, Applicant submits that pending Claims 1-5 are now in condition for allowance. Reconsideration of the Rejections and Objections are requested. Allowance of Claims 1-5 at an early date is solicited.

If an extension of time is required for timely submission of this response, Applicant hereby petitions for an appropriate extension of time and the Office is authorized to charge Deposit Account 02-0900 for the appropriate additional fees in connection with the filing of this response or credit any overpayment.

The Examiner is invited to telephone the undersigned should any questions arise.

Respectfully submitted,

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